We Claim:

1. A material mixture, comprising: an amount of a phase change material and an amount of particulate expanded graphite mixed with said phase change material.

2. The mixture according to claim 1, wherein the expanded graphite is present in an amount of 5 to 40% by volume.

3. The mixture according to claim 1, which further comprises a nucleating agent for a phase transition of the phase change material.

4. The mixture according to claim 3, wherein said nucleating agent is present in an amount of at most 2% by volume of the mixture.

5. The mixture according to claim 1, wherein said expanded graphite is formed of particles with a bulk density of 2 to 200 g/l and a mean particle diameter of 5 µm to 5 mm.

6. The mixture according to claim 5, wherein said particles are selected from the group consisting of expanded graphite product with a bulk density of from 2 to 20 g/l, comminuted expanded graphite product with a bulk density of 20 to 150 g/l, comminuted, compacted expanded graphite product with a

bulk density of from 60 to 200 g/l and reexpanded, compacted expanded graphite product with a bulk density of from 20 to 150 g/l.

7. The mixture according to claim 1, wherein said phase change material has a phase transition temperature in a range from -100°C to +500°C and is a material selected from the group consisting of paraffins, sugar alcohols, gas hydrates, water, aqueous salt solutions, salt-water eutectics, salt hydrates, mixtures of salt hydrates, salts and eutectic mixtures of salts, alkali metal hydroxides, and mixtures of salts and alkali metal hydroxides.

8. A method for producing a heat storage device, which comprises:

mixing an amount of expanded graphite and an amount of phase change material to produce the mixture according to claim 1; and

shaping the mixture under pressure to form a shaped body.

9. The method according to claim 8, wherein the mixing step comprises mixing a powder of the expanded graphite with a powder of the phase change material.

10. The method according to claim 8, wherein the mixing step comprises melting the phase change material and mixing expanded graphite into the molten phase change material.

11. The method according to claim 8, wherein the shaping step comprises pressing the materials into the form of a shaped body.

12. The method according to claim 8, which comprises forming the shaped body with anisotropic thermal conductivity by one of extrusion and injection molding.

13. The method according to claim 8, which comprises forming the shaped body having anisotropic thermal conductivity with a jolting molding machine.